Spreadsheet

Sensitivity		1	2	3	4
		SCPC w Eastern	IGCC w Eastern Base Case	SCPC w Western	IGCC w Western
	Engineering Parameters				
	kW rating	600,000	600,000	,	
5, 6 7, 8	Hours per year Capacity Factor	8760 85.0%	8760 80.0%	8760 85.0%	8760 80.0%
	kWh each year	4,467,600,000	4,204,800,000	4,467,600,000	4,204,800,000
	Construction Cost (\$/kW)	\$1,415	\$1,628	\$1,391	\$1,599
, ,	Capital Costs	· · · · · · ·	* /	, , , , , , , , , , , , , , , , , , ,	, , , , , , , , , , , , , , , , , , , ,
	Project Cost	\$849,292,683	\$976,686,585	\$834,370,631	\$959,526,225
9	Additional Time for Construction		· · · · ·	, , ,	
	Economic Cost of Capital	12.90%	12.90%	12.90%	12.90%
10	-Operating Life (Years)	30	30	30	30
	Annual Capital Cost	\$112,512,568	\$129,389,453	\$110,535,724	\$127,116,083
	\$/kW each year	\$187.52	\$215.65	\$184.23	\$211.86
	Total Capital Costs (\$/MWH)	\$25.18	\$30.77	\$24.74	\$30.23
	Fuel Costs				
40.45	Estimated efficiency	38.6%	39.2%	37.3%	36.7%
12, 13	Heat Rate (BTU/kWh)	8,850	8,700	9,150	9,300
44.45	Fuel heating value (BTU/lb)	10,200	10,200		
14, 15	Average Price(\$/MMBTU) Total Fuel Costs (\$/MWH)	\$1.75 \$ 15.49	\$1.75 \$ 15.23		\$1.50 \$ 13.95
	O&M Costs				
16, 17	Fixed Operating costs (\$/kW/year)	\$24.00	\$34.21	\$24.00	\$34.21
18, 19	Variable O&M costs (\$/MWH)	\$3.00	\$2.58	\$3.00	\$2.58
10, 10	Variable Gain code (\$111111)	ψ0.00	Ψ2.00	ψο.σσ	Ψ2.00
	Production sulfuric acid (tons/yr)	0	109,200	0	36,036
20, 21	sulfuric acid (\$/ton)	0	\$40.00	0	\$40.00
•	Sulfuric acid value	0	\$4,368,000	0	\$1,441,440
	Annualized variable costs	\$13,402,800	\$6,480,384	\$13,402,800	\$9,406,944
	Annualized fixed costs	\$14,400,000	\$20,526,000	\$14,400,000	\$20,526,000
	Total Fixed and Variable	\$27,802,800	\$27,006,384	\$27,802,800	\$29,932,944
	Total O&M costs (\$/MWH)	\$6.22	\$6.42	\$6.22	\$7.12
	Total Odin costs (\$/mwil)	Ψ0.22			
	Emissions	ψ0.22		·	
		\$0.22			
	Emissions Rate (#/MWH) NOx	0.62	0.51	0.55	0.55
	Emissions Rate (#/MWH) NOx SOx	0.62	0.29	0.82	0.3
	Emissions Rate (#/MWH) NOx SOx Hg	0.62 1.33 0.00000991	0.29 0.00000974	0.82 0.00001556	0.3° 0.00001318
24	Rate (#/MWH) NOx SOx Hg CO2	0.62	0.29	0.82 0.00001556	0.3° 0.00001318
24	Emissions Rate (#/MWH) NOx SOx Hg CO2 Estimated Tons per Year	0.62 1.33 0.00000991 1,831	0.29 0.00000974 1,800	0.82 0.00001556 1,960	0.3 0.00001318 1,992
24	Emissions Rate (#/MWH) NOx SOx Hg CO2 Estimated Tons per Year NOx	0.62 1.33 0.0000991 1,831	0.29 0.0000974 1,800 1,072,224	0.82 0.00001556 1,960 1,474,308	0.3 0.00001318 1,992 1,156,320
24	Emissions Rate (#/MWH) NOx SOx Hg CO2 Estimated Tons per Year NOx SOx	0.62 1.33 0.00000991 1,831 1,384,956 2,965,370	0.29 0.00000974 1,800 1,072,224 603,599	0.82 0.00001556 1,960 1,474,308 2,207,441	0.3 0.00001318 1,992 1,156,320 645,227
24	Emissions Rate (#/MWH) NOx SOx Hg CO2 Estimated Tons per Year NOx SOx Hg	0.62 1.33 0.00000991 1,831 1,384,956 2,965,370 22	0.29 0.00000974 1,800 1,072,224 603,599 20	0.82 0.00001556 1,960 1,474,308 2,207,441 42	0.3 0.00001318 1,992 1,156,320 645,227 28
	Emissions Rate (#/MWH) NOx SOx Hg CO2 Estimated Tons per Year NOx SOx Hg CO2	0.62 1.33 0.00000991 1,831 1,384,956 2,965,370	0.29 0.00000974 1,800 1,072,224 603,599	0.82 0.00001556 1,960 1,474,308 2,207,441	0.3 0.00001318 1,992 1,156,320 645,227 28
24	Emissions Rate (#/MWH) NOx SOx Hg CO2 Estimated Tons per Year NOx SOx Hg CO2 Cost/Ton	0.62 1.33 0.00000991 1,831 1,384,956 2,965,370 22 4,090,430,688	0.29 0.00000974 1,800 1,072,224 603,599 20 3,784,565,981	0.82 0.00001556 1,960 1,474,308 2,207,441 42 5,252,974,147	0.3 0.00001318 1,992 1,156,320 645,227 28 4,187,520,374
	Emissions Rate (#/MWH) NOx SOx Hg CO2 Estimated Tons per Year NOx SOx Hg CO2	0.62 1.33 0.00000991 1,831 1,384,956 2,965,370 22	0.29 0.00000974 1,800 1,072,224 603,599 20	0.82 0.00001556 1,960 1,474,308 2,207,441 42 5,252,974,147 \$2,000	0.3 0.00001318 1,992 1,156,320 645,227 28 4,187,520,374 \$2,000
	Rate (#/MWH)	0.62 1.33 0.00000991 1,831 1,384,956 2,965,370 22 4,090,430,688 \$2,000	0.29 0.0000974 1,800 1,072,224 603,599 20 3,784,565,981 \$2,000	0.82 0.00001556 1,960 1,474,308 2,207,441 42 5,252,974,147 \$2,000	0.3 0.00001318 1,992 1,156,320 645,227 28 4,187,520,374 \$2,000 \$800
	Emissions Rate (#/MWH) NOx SOx Hg CO2 Estimated Tons per Year NOx SOx Hg CO2 Cost/Ton NOx SOx Hg CO2	0.62 1.33 0.00000991 1,831 1,384,956 2,965,370 22 4,090,430,688 \$2,000 \$800	0.29 0.0000974 1,800 1,072,224 603,599 20 3,784,565,981 \$2,000 \$800	0.82 0.00001556 1,960 1,474,308 2,207,441 42 5,252,974,147 \$2,000 \$800	0.3 0.00001318 1,992 1,156,320 645,227 28 4,187,520,374 \$2,000 \$800
	Emissions Rate (#/MWH) NOx SOx Hg CO2 Estimated Tons per Year NOx SOx Hg CO2 Cost/Ton NOx SOx Hg CO2 Annual Cost	0.62 1.33 0.00000991 1,831 1,384,956 2,965,370 22 4,090,430,688 \$2,000 \$800	0.29 0.00000974 1,800 1,072,224 603,599 20 3,784,565,981 \$2,000 \$800 \$20,000,000	0.82 0.00001556 1,960 1,474,308 2,207,441 42 5,252,974,147 \$2,000 \$800 \$20,000,000	0.3 0.00001318 1,992 1,156,320 645,227 28 4,187,520,374 \$2,000 \$800
	Rate (#/MWH)	0.62 1.33 0.00000991 1,831 1,384,956 2,965,370 22 4,090,430,688 \$2,000 \$800 \$20,000,000	0.29 0.00000974 1,800 1,072,224 603,599 20 3,784,565,981 \$2,000 \$800 \$20,000,000	0.82 0.00001556 1,960 1,474,308 2,207,441 42 5,252,974,147 \$2,000 \$800 \$20,000,000	0.3 0.00001318 1,992 1,156,320 645,227 28 4,187,520,374 \$2,000 \$800 \$20,000,000 \$20,000,000
	Emissions Rate (#/MWH) NOx SOx Hg CO2 Estimated Tons per Year NOx SOx Hg CO2 Cost/Ton NOx SOx Hg CO2 Annual Cost NOx Monetized SOx Monetized	0.62 1.33 0.00000991 1,831 1,384,956 2,965,370 22 4,090,430,688 \$2,000 \$800 \$20,000,000	0.29 0.0000974 1,800 1,072,224 603,599 20 3,784,565,981 \$2,000 \$800 \$20,000,000 \$21,144,448 \$482,879	0.82 0.00001556 1,960 1,474,308 2,207,441 42 5,252,974,147 \$2,000 \$800 \$20,000,000 \$21,765,953	0.3 0.00001318 1,992 1,156,320 645,227 28 4,187,520,37 \$2,000 \$800 \$20,000,000 \$20,000,000 \$2,312,640 \$516,181
22, 23	Emissions Rate (#/MWH) NOx SOx Hg CO2 Estimated Tons per Year NOx SOx Hg CO2 Cost/Ton NOx SOx Hg CO2 Annual Cost NOx Monetized SOx Monetized Hg Monetized Hg Monetized	0.62 1.33 0.00000991 1,831 1,384,956 2,965,370 22 4,090,430,688 \$2,000 \$800 \$20,000,000	0.29 0.00000974 1,800 1,072,224 603,599 20 3,784,565,981 \$2,000 \$800 \$20,000,000	0.82 0.00001556 1,960 1,474,308 2,207,441 42 5,252,974,147 \$2,000 \$800 \$20,000,000 \$21,765,953	0.3 0.00001318 1,992 1,156,320 645,227 28 4,187,520,37 \$2,000 \$800 \$20,000,000 \$20,000,000 \$2,312,640 \$516,181
	Emissions Rate (#/MWH) NOx SOx Hg CO2 Estimated Tons per Year NOx SOx Hg CO2 Cost/Ton NOx SOx Hg CO2 Annual Cost NOx Monetized SOx Monetized	0.62 1.33 0.00000991 1,831 1,384,956 2,965,370 22 4,090,430,688 \$2,000 \$800 \$20,000,000	0.29 0.0000974 1,800 1,072,224 603,599 20 3,784,565,981 \$2,000 \$800 \$20,000,000 \$21,144,448 \$482,879	0.82 0.00001556 1,960 1,474,308 2,207,441 42 5,252,974,147 \$2,000 \$800 \$20,000,000 \$21,765,953	0.3 0.00001318 1,992 1,156,320 645,227 28 4,187,520,374 \$2,000 \$800 \$20,000,000 \$21,312,640 \$516,181 \$553,982
22, 23	Emissions Rate (#/MWH) NOx SOx Hg CO2 Estimated Tons per Year NOx SOx Hg CO2 Cost/Ton NOx SOx Hg CO2 Annual Cost NOx Monetized SOx Monetized Hg Monetized CO2 monetized	0.62 1.33 0.0000991 1,831 1,384,956 2,965,370 22 4,090,430,688 \$2,000 \$800 \$20,000,000 \$22,769,912 \$2,372,296 \$442,829	0.29 0.0000974 1,800 1,072,224 603,599 20 3,784,565,981 \$2,000 \$800 \$20,000,000 \$409,716	0.82 0.00001556 1,960 1,474,308 2,207,441 42 5,252,974,147 \$2,000 \$800 \$20,000,000 \$1,765,953 \$833,922 \$5,548,491	\$2,312,644 \$513,982 \$3,382,804
22, 23	Emissions Rate (#/MWH) NOx SOx Hg CO2 Estimated Tons per Year NOx SOx Hg CO2 Cost/Ton NOx SOx Hg CO2 Annual Cost NOx Monetized SOx Monetized SOx Monetized TOTAL Monetized Total Emissions monetized (\$/MWH) Production Cost Totals (from above)	0.62 1.33 0.00000991 1,831 1,384,956 2,965,370 22 4,090,430,688 \$2,000 \$800 \$20,000,000 \$22,769,912 \$2,372,296 \$442,829 \$5,585,036	\$2,000 \$20,0000974 1,800 1,072,224 603,599 20 3,784,565,981 \$2,000 \$800 \$20,000,000 \$442,879 \$409,716 \$3,037,043	\$2,948,616 \$1,765,953 \$5,5548,491 \$1.24	\$2,312,640 \$553,982 \$3,382,804 \$0.80
22, 23	Emissions Rate (#/MWH) NOx SOx Hg CO2 Estimated Tons per Year NOx SOx Hg CO2 Cost/Ton NOx SOx Hg CO2 Annual Cost NOx SOx Hg CO2 Total Emissions monetized (\$/MWH) Production Cost Totals (from above) Capital	\$2,769,912 \$2,372,296 \$442,829 \$1,25 \$25.18	0.29 0.00000974 1,800 1,072,224 603,599 20 3,784,565,981 \$2,000 \$800 \$20,000,000 \$21,144,448 \$442,879 \$409,716 \$3,037,043 \$0.72	0.82 0.00001556 1,960 1,474,308 2,207,441 42 5,252,974,147 \$2,000 \$800 \$20,000,000 \$21,765,953 \$833,922 \$5,548,491 \$1.24	\$2,312,640 \$2,312,640 \$3,382,804 \$3,382,804 \$3,000 \$20,000,000 \$20,000,000 \$3,382,804 \$3,382,804
22, 23	Emissions Rate (#/MWH) NOX SOX Hg CO2 Estimated Tons per Year NOX SOX Hg CO2 Cost/Ton NOX SOX Hg CO2 Annual Cost NOX SOX Hg CO2 Annual Cost NOX TOTAL Monetized TOTAL Monetized Total Emissions monetized (\$/MWH) Production Cost Totals (from above) Capital Fuel	\$2,769,912 \$2,372,296 \$1,325 \$1,384,956 2,965,370 22 4,090,430,688 \$2,000 \$800 \$20,000,000 \$21,000 \$21,372,296 \$442,829 \$5,585,036 \$1.25	0.29 0.00000974 1,800 1,072,224 603,599 20 3,784,565,981 \$2,000 \$800 \$20,000,000 \$442,879 \$409,716 \$3,037,043 \$0.72	0.82 0.00001556 1,960 1,474,308 2,207,441 42 5,252,974,147 \$2,000 \$800 \$20,000,000 \$21,765,953 \$833,922 \$5,548,491 \$1.24	\$2,312,640 \$553,982 \$3,382,804 \$30,003 \$13,95
22, 23	Emissions Rate (#/MWH) NOx SOx Hg CO2 Estimated Tons per Year NOx SOx Hg CO2 Cost/Ton NOx SOx Hg CO2 Annual Cost NOx SOx Hg CO2 Total Emissions monetized (\$/MWH) Production Cost Totals (from above) Capital	\$2,769,912 \$2,372,296 \$442,829 \$1,25 \$25.18	0.29 0.00000974 1,800 1,072,224 603,599 20 3,784,565,981 \$2,000 \$800 \$20,000,000 \$21,144,448 \$442,879 \$409,716 \$3,037,043 \$0.72	0.82 0.00001556 1,960 1,474,308 2,207,441 42 5,252,974,147 \$2,000 \$800 \$20,000,000 \$21,948,616 \$1,765,953 \$833,922 \$5,548,491 \$1.24	\$1,156,320 645,227 28 4,187,520,374 \$2,000 \$800 \$20,000,000 \$516,181 \$553,982 \$3,382,804 \$0.80